

**LOW NO_x EMISSIONS, LOW NOISE BURNER ASSEMBLY AND METHOD FOR
REDUCING THE NO_x CONTENT OF FURNACE FLUE GAS**

ABSTRACT OF THE DISCLOSURE

A burner assembly for a furnace or like device having a firebox defining a combustion zone. The burner assembly includes a first annular tile defining a centrally located path for a flow of combustion air and a second annular tile concentric with the first annular tile. The second annular tile has an internal diameter which is larger than an external diameter of said first annular tile, and the second annular tile is positioned in surrounding relationship relative to at least a portion of said first annular tile so that a ring-shaped conduit is defined therebetween. The tiles are adapted for placement in the combustion zone of the furnace with the conduit in direct fluid communication with flue gases surrounding the combustion zone. The arrangement is such that combustion air flowing along said path induces a flow of flue gas through the conduit for entrainment by the flow of combustion air. The assembly may also include a gas jet positioned adjacent an inlet to said conduit providing a flow of gas for admixture with said flow of flue gas.

A method is also disclosed whereby the burner assembly is used for introducing RFG into the combustion zone to thereby efficiently and effectively reduce the NO_x content of furnace flue gas produced when air and fluid fuel are combusted in a combustion zone of a furnace.